

### Listing of Claims

1. (Currently Amended) Method for shimming a main magnetic field in a magnetic resonance device, the method comprising the following steps:
  - a) generating at least one spatially selective radio frequency pulse (RF) for exciting nuclear spin magnetization within a restricted region of the examination volume of the magnetic resonance device;
  - b) acquiring a magnetic resonance signal that is sensitive to the homogeneity of the main magnetic field;
  - c) applying electric currents to a shim coil arrangement of the magnetic resonance device such that the main magnetic field is adjusted in accordance to the properties of the magnetic resonance signal acquired in step b);characterized in that the electric currents applied to the shim coil arrangement are at least partially switched off during the generation of the spatially selective radio frequency pulse in step a) and switched on during the acquisition of the magnetic resonance signal in step b) wherein steps a) to c) are repeated such that the homogeneity of the main magnetic field is optimized iteratively.
2. (Canceled) Method according to claim 1, wherein steps a) to c) are repeated such that the homogeneity of the main magnetic field is optimized iteratively.
3. (Previously Presented) Method according to claim 1, wherein a linear gradient magnetic field is temporarily superimposed upon the radio frequency pulse in step a) for the purpose of slice selection by means of a gradient coil arrangement of the magnetic resonance device.
4. (Previously Presented) Method according to claim 3, wherein the electrical currents applied to the shim coil arrangement in step c) generate linear gradient magnetic fields within the examination volume of the magnetic resonance device.
5. (Previously Presented) Method according to claim 4, wherein only those currents applied to the shim coil arrangement are switched off during the generation of

the spatially selective radio frequency pulse in step a) which generate linear gradient magnetic fields in the direction of the slice-selection gradient superimposed upon the radio frequency pulse.

6. (Previously Presented) Method according to claim 1, wherein the main magnetic field is adjusted in step c) such that the amplitude of the acquired magnetic resonance signal is maximized and/or the spectral width of the magnetic resonance signal is minimized.

7. (Canceled) Device for magnetic resonance imaging of an object placed in a stationary and substantially homogeneous main magnetic field, the device comprising a main magnetic coil for establishing the main magnetic field, a shim coil arrangement for compensating for inhomogeneities of the main magnetic field, gradient coils for generating magnetic field gradients superimposed upon the main magnetic field, a radio frequency antenna for radiating radio frequency pulses towards the object, control means for controlling electric currents applied to the shim coil arrangement and for controlling the generation of the magnetic field gradients and the radio frequency pulses, receiving means for receiving and sampling magnetic resonance signals generated by sequences of radio frequency pulses and magnetic field gradient pulses, and reconstruction means for forming an image from the signal samples, characterized in that the control means comprises a programming with a description of a shimming procedure according to a method of claim 1.

8. (Canceled) Computer program with a program code, wherein the program code enables a shimming procedure according to a method of claim 1 to be carried out on a magnetic resonance device.